

CLAIMS

1. A method for preparing deflavored whey protein material, said method comprising:

(a) preparing an aqueous composition of a whey protein material containing soluble whey proteins and flavoring compounds;

(b) adjusting the aqueous composition of (a) to either (1) a basic pH in the range of about 8.5 to about 12 or (2) an acidic pH in the range of about 2.5 to about 4, thereby releasing the flavoring compounds;

(c) passing the pH-adjusted aqueous composition of (b) adjacent an ultrafiltration membrane having a molecular weight cutoff up to about 50,000 Daltons, while maintaining the pH in the same range as adjusted in step (b), under suitable ultrafiltration conditions wherein the flavor compounds pass through the membrane, thereby deflavoring the whey protein material and retaining substantially all of the soluble whey proteins; and

(e) recovering the soluble whey proteins retained by the ultrafiltration membrane to obtain the deflavored whey protein material.

2. The method of claim 1, wherein the pH of the aqueous composition is adjusted to the basic pH in step (b).

3. The method of claim 1, wherein the pH of the aqueous composition is adjusted to the acidic pH in step (b).

4. The method of claim 1, wherein the whey protein material is at least one member of the group consisting of whey from a cheese making process, whey protein isolate, and whey protein concentrate.

5. The method of claim 1, wherein the whey protein material is treated prior to step (c) to remove any water insoluble material that may be present.

6. The method of claim 5, wherein the water insoluble material that may be present is removed from the pH-adjusted aqueous composition using at least one centrifugation step.

7. The method of claim 5, wherein the water insoluble material that may be present is removed using at least one clarification step.

8. The method of claim 4, wherein the aqueous composition of (a) has a concentration of soy material in the range of about 1 to about 50 percent.

9. The method of claim 5, wherein the aqueous composition of (a) has a concentration of soy material in the range of about 1 to about 50 percent.

10. The method of claim 4, wherein the ultrafiltration membrane has a cutoff in the range of about 1,000 to about 50,000 Daltons.

11. The method of claim 5, wherein the ultrafiltration membrane has a cutoff in the range of about 1,000 to about 50,000 Daltons.

12. The method of claim 10, wherein the ultrafiltration membrane has a cutoff in the range of about 10,000 to about 30,000 Daltons.

13. The method of claim 11, wherein the ultrafiltration membrane has a cutoff in the range of about 10,000 to about 30,000 Daltons.

14. The method of claim 12, wherein the ultrafiltration is carried out at a temperature in the range of about 10 to about 60°C and a suitable pressure.

15. The method of claim 13, wherein the ultrafiltration is carried out at a temperature in the range of about 10 to about 60°C and a suitable pressure.

16. The method of claim 14, wherein the ultrafiltration membrane is a polymer, ceramic, or inorganic membrane.

17. The method of claim 15, wherein the ultrafiltration membrane is a polymer, ceramic, or inorganic membrane.

18. The method of claim 1, wherein the deflavored whey protein material is further treated to remove water to obtain a solid deflavored whey protein material.

19. The method of claim 6, wherein the deflavored whey protein material is further treated to remove water to obtain the deflavored whey protein material in a solid form.

20. The method of claim 9, wherein the deflavored whey protein material is further treated to remove water to obtain the deflavored whey protein material in a solid form.

21. The method of claim 1, wherein the deflavored whey protein material is spray dried to remove water to obtain the deflavored whey protein material in a solid form.

22. The method of claim 6, wherein the deflavored whey protein material is spray dried to remove water to obtain the deflavored whey protein material in a solid form.

23. The method of claim 7, wherein the deflavored whey protein material is spray dried to remove water to obtain the deflavored whey protein material in a solid form.

24. A whey-containing food product comprising a deflavored whey protein, wherein the whey-containing food product is prepared by

incorporating the deflavored whey protein into a food product and wherein the deflavored whey protein is prepared by a process comprising:

(a) preparing an aqueous composition of a whey protein material containing soluble whey proteins and flavoring compounds;

(b) adjusting the aqueous composition of (a) to either (1) a basic pH in the range of about 8.5 to about 12 or (2) an acidic pH in the range of about 2.5 to about 4, thereby releasing the flavoring compounds;

(c) passing the pH-adjusted aqueous composition of (b) adjacent an ultrafiltration membrane having a molecular weight cutoff up to about 50,000 Daltons, while maintaining the pH in the same range as adjusted in step (b), under suitable ultrafiltration conditions wherein the flavor compounds pass through the membrane, thereby deflavoring the whey protein material and retaining substantially all of the soluble whey proteins; and

(e) recovering the soluble whey proteins retained by the ultrafiltration membrane to obtain the deflavored whey protein material

25. The whey-containing food product of claim 24, wherein the pH of the aqueous composition is adjusted to the basic pH in step (b).

26. The whey-containing food product of claim 24, wherein the pH of the aqueous composition is adjusted to the acidic pH in step (b).

27. The whey-containing food product of claim 24, wherein the food product is selected from the group consisting of dairy and non-dairy beverages, smoothies, health drinks, cheeses, cheese analogs, dairy and non-dairy yogurts, meat and meat analog products, cereals, baked products, and snacks.

28. The whey-containing food product of claim 24, wherein the whey-containing food product contains about 10 to about 30 percent deflavored whey protein.

29. The whey-containing food product of claim 25, wherein the whey-containing food product contains about 10 to about 30 percent deflavored whey protein.

30. The whey-containing food product of claim 26, wherein the whey-containing food product contains about 10 to about 30 percent deflavored whey protein.

31. The whey-containing food product of claim 25, wherein the whey-containing food product is a beverage having a pH of greater than 5.

32. The whey-containing food product of claim 26, wherein the whey-containing food product is a beverage having a pH of less than 4.5.